93D CONGRESS } HOUSE OF REPRESENTATIVES { REPORT
2d Session } { No. 93-762

COAST GUARD SAFETY STANDARDS FOR BOILERS AND PRESSURE VESSELS

JANUARY 22, 1974.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mrs. SULLIVAN, from the Committee on Merchant Marine and Fisheries, submitted the following

REPORT

[To accompany H.R. 10309]

The Committee on Merchant Marine and Fisheries, to whom was referred the bill (H.R. 10309) to amend the Act of June 13, 1933 (Public Law 73-40), concerning safety standards for boilers and pressure vessels, and for other purposes, having considered the same, report favorably thereon without amendment and recommend that the bill do pass.

PURPOSE OF THE LEGISLATION

The purpose of the bill is to amend the Act of June 13, 1933, to provide greater flexibility in the safety standards applicable to boilers and pressure vessels which in turn will allow the Coast Guard to maintain a more realistic position, consistent with current technology, in the regulation of marine safety.

BACKGROUND AND NEED FOR THE LEGISLATION

The statute to be amended provides that the maximum working pressure for marine boilers and pressure vessels shall be based on a safety factor of four. This means that boilers and pressure vessels must be built in such a way as to theoretically withstand up to four times their normal operating pressure without failure. The proposed amendment would empower the Commandant of the Coast Guard to set boiler and pressure vessel standards through the regulatory process. It would also reword the statute so as to simplify its language.

The original statute was passed in 1933. Since then significant strides have been made in stress analysis, in the manufacturing and testing of construction materials, and in the technology of boiler and pressure vessel fabrication. Boiler and Pressure Codes which represent more modern standards for safety in boiler and pressure vessel design have been developed by the American Society of Mechanical Engi-

neers (ASME). These Codes permit the use of a safety factor of three. Equivalent or higher integrity is obtained by replacing a larger safety or ignorance factor of four with the smaller safety factor of three accompanied by a detailed stress analysis. Requirements for material fabrication and inspection are also more restrictive under the Codes and reflect practices which have been developed and proven in the United States during the past decade in the construction of nuclear reactor vessels.

A number of current projects of interest to both the government and industry, including a proposed floating nuclear power plant, various liquified natural gas (LNG) cargo containment systems using pressure vessel type tanks, and the American Society of Mechanical Engineers Ad Hoc Committee study on hyperbaric chambers, would utilize an ASME Code with the pressure vessel safety factor of three. In each of these projects, a saving in terms of safety and weight efficiency is achieved by using the more modern safety factor combined with a detailed stress analysis. The inability of the Coast Guard to use the ASME Code or similar standards imposes economic and technical hardships on the American shipbuilding industry without a meaningful return of benefits in terms of increased safety.

The proposed amendment is needed to permit greater flexibility in the safety standards applicable to boilers and pressure vessels. The flexibility provided by this bill will allow the Coast Guard to maintain a more realistic position, consistent with current technology, in the regulation of marine safety.

Committee Action and Conclusion

The Committee held hearings on October 2, 1973. All testimony was favorable. The Committee ordered the legislation favorably reported without objection.

Cost of Legislation

Pursuant to Clause 7 of Rule XIII of the Rules of the House of Representatives, the Committee estimates that there will be no additional cost to the Government as the result of the enactment of this legislation.

Departmental Reports

The Department of Transportation transmitted an Executive Communication dated June 25, 1973 on the subject legislation. The draft bill submitted is now H.R. 10309 and the Executive Communication is No. 1083, which follows herewith. There also follows a report from the Department of Commerce:

[Exec. Comm. No. 1083]

The Secretary of Transportation,
Washington, D.C., June 25, 1973.

Hon. Carl Albert,
Speaker of the House of Representatives,
Washington, D.C.

Dear Mr. Speaker: There is transmitted herewith a draft of a proposed bill "To amend the Act of June 13, 1933 (P.L. 73–40), concern-

ing safety standards for boilers and pressure vessels, and for other purposes."

The statute to be amended provides that the maximum working pressure for marine boilers and pressure vessels shall be based on a safety factor of four. This means the boilers and pressure vessels must be built in such a way as to theoretically withstand up to four times their normal operating pressure without failure. The proposed amendment would empower the Commandant of the Coast Guard to set boiler and pressure vessel standards through the regulatory process. It would also reword the statute simplifying its language.

The present statute was passed in 1933. Since then significant strides have been made in stress analysis, in the manufacture and testing of construction materials and in the technology of boiler and pressure vessel fabrication. Boiler and Pressure Codes which represent more modern standards for safety in boiler and pressure vessel design have been developed by the American Society of Mechanical Engineers. These Codes permit a safety factor of three. Yet under the Codes an equivalent or higher integrity than is required under present law can be obtained by replacing a larger safety factor or ignorance factor of four with a smaller safety factor of three and performing a detailed stress analysis. Requirements for materials fabrication and inspection are also more restrictive under the Codes. These increased requirements reflect practices which have been developed and proven in the U.S. during the past decade in the construction of nuclear reactor vessels.

The Office of Merchant Marine Safety within the Coast Guard is currently considering industry and government proposals concerning the Tenneco/Westinghouse offshore floating nuclear power generating plant, the MARAD/General Electric Nuclear ship propulsion study, the ASME Ad Hoc Committee study on hyperbaric chambers, and various liquified natural gas (LNG) cargo containment systems utilizing pressure vessel type tanks. These proposed projects would utilize an ASME Code involving a pressure vessel with a safety factor of three.

The inability of the Coast Guard to use the Code standards, or similar standards, would impose an economic and technical hardship on the American shipbuilding industry without meaningful benefits in terms of increased safety. The proposed amendment would open the way to greater flexibility in the safety standards applicable to boilers and pressure vessels. Such flexibility would allow the Coast Guard to maintain a more realistic position, consistent with current technology, in the regulation of marine safety.

It would be appreciated if you would lay the proposed bill before the House of Representatives. A similar bill has been transmitted to the President of the Senate.

The Office of Management and Budget has advised that there is no objection from the standpoint of the Administration's program to the submission of this proposed legislation to the Congress.

Sincerely,

CLAUDE S. BRINEGAR.

Enclosure.

(The attached draft bill is now H.R. 10309.)

GENERAL COUNCIL OF THE DEPARTMENT OF COMMERCE,
Washington, D.C., January 17, 1974.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries, U.S. House of Representatives, Washington, D.C.

DEAR MADAM CHAIRMAN: This is in further reply to your request for the views of this Department with respect to H.R. 10309, a bill—

To amend the Act of June 13, 1933 (Public Law 73–40), concerning safety standards for boilers and pressure vessels, and for other purposes.

The Act of June 13, 1933, requires that boilers and pressure vessels for use on ships must be built in such a way as to theoretically withstand up to four times their normal operating pressure without failure. The bill would delete this requirement and would authorize the Commandant of the Coast Guard to set boiler and pressure vessel standards through the regulatory process.

We recommend enactment of the bill. The bill would permit the Coast Guard to utilize current technology in setting standards and would allow periodic upgrading of such standards in keeping with technological advances.

We have been advised by the Office of Management and Budget that there would be no objection to the submission of our report to the Congress from the standpoint of the Administration's program.

Sincerely,

KARL E. BAKKE,
General Counsel.

CHANGES IN EXISTING LAW

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, as amended, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

SECTION 4433 OF THE REVISED STATUTES, AS AMENDED (46 U.S.C. 411)

SEC. 4433. The board of supervising inspectors is hereby empowered to prescribe formulas, rules, and regulations for the design, material, [and] construction, *and operation* of boilers, unfired pressure vessels, *piping, valves, fittings,* and *other* appurtenances [thereof, and steam piping] for use on vessels subject to the provisions of this Act. [The maximum working pressure shall be determined by formulas prescribed by the board of supervising inspectors, and no such boiler, pressure vessel, or appurtenance thereof shall be designed or operated where the factor of safety is less than four: *Provided*, That the minimum thickness and maximum allowable working pressure of valves, fittings, and other appurtenances shall be determined by formulas prescribed by the board of supervising inspectors.]

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